Maxxam
A Bureau Veritas Group Company

Your Project #: PFC
Site Location: BFTA
Your C.O.C. #: 558437-11-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2017/01/19
Report #: R4330044
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B702230
Received: 2017/01/05, 14:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water	3	2017/01/09	2017/01/11	CAM SOP-00894	EPA 537 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Stephanie Pollen
Project Manager
19 Jan 2017 16:16:07

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Stephanie Pollen, Project Manager
Email: SPollen@maxxam.ca
Phone# (905) 817-5700

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Sampler Initials: SM

RESULTS OF ANALYSES OF WATER

Maxxam ID		DSE693			DSE694	DSE695			
Sampling Date		2017/01/04 09:30			2017/01/04 09:30	2017/01/04 09:30			
COC Number		558437-11-01			558437-11-01	558437-11-01			
	UNITS	**PRW-4 INFLUENT**	**RDL**	**MDL**	**MID POINT**	**EFFLUENT**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	0.29	0.020	0.0065	0.057	<0.0065	0.020	0.0065	4818365
8:2 Fluorotelomer sulfonate	ug/L	0.20	0.020	0.0055	0.013	<0.0055	0.020	0.0055	4818365
N-ethylperfluorooctane sulfonamide	ug/L	<0.0053	0.020	0.0053	<0.0053	<0.0053	0.020	0.0053	4818365
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0049	0.020	0.0049	0.0072	<0.0049	0.020	0.0049	4818365
N-methylperfluorooctane sulfonamide	ug/L	<0.0040	0.020	0.0040	<0.0040	<0.0040	0.020	0.0040	4818365
N-methylperfluorooctanesulfonamidol	ug/L	<0.0061	0.020	0.0061	<0.0061	<0.0061	0.020	0.0061	4818365
Perfluorobutane Sulfonate (PFBS)	ug/L	0.032	0.020	0.0019	0.011	<0.0019	0.020	0.0019	4818365
Perfluorobutanoic acid	ug/L	0.046	0.020	0.0066	0.017	<0.0066	0.020	0.0066	4818365
Perfluorodecane Sulfonate	ug/L	0.0044	0.020	0.0043	<0.0043	<0.0043	0.020	0.0043	4818365
Perfluorodecanoic Acid (PFDA)	ug/L	0.0087	0.020	0.0066	<0.0066	<0.0066	0.020	0.0066	4818365
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0057	0.020	0.0057	<0.0057	<0.0057	0.020	0.0057	4818365
Perfluoroheptane sulfonate	ug/L	0.072	0.020	0.0036	0.0077	<0.0036	0.020	0.0036	4818365
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.093	0.020	0.0047	0.020	<0.0047	0.020	0.0047	4818365
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.50	0.020	0.0040	0.098	<0.0040	0.020	0.0040	4818365
Perfluorohexanoic Acid (PFHxA)	ug/L	0.20	0.020	0.0046	0.062	<0.0046	0.020	0.0046	4818365
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.095	0.020	0.0053	0.015	<0.0053	0.020	0.0053	4818365
Perfluorononanoic Acid (PFNA)	ug/L	0.052	0.020	0.0046	0.0055	<0.0046	0.020	0.0046	4818365
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.012	0.020	0.0058	<0.0058	<0.0058	0.020	0.0058	4818365
Perfluorooctane Sulfonate (PFOS)	ug/L	4.9 (1)	0.40	0.033	0.36	<0.0033	0.020	0.0033	4818365
Perfluoropentanoic Acid (PFPeA)	ug/L	0.16	0.020	0.0036	0.049	<0.0036	0.020	0.0036	4818365
Perfluorotetradecanoic Acid	ug/L	<0.0052	0.020	0.0052	<0.0052	<0.0052	0.020	0.0052	4818365
Perfluorotridecanoic Acid	ug/L	<0.0032	0.020	0.0032	<0.0032	<0.0032	0.020	0.0032	4818365
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.059	0.020	0.0037	<0.0037	<0.0037	0.020	0.0037	4818365
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	87	N/A	N/A	83	87	N/A	N/A	4818365
13C4-Perfluorooctanoic acid	%	87	N/A	N/A	92	88	N/A	N/A	4818365
13C8-Perfluorooctanesulfonamide	%	87	N/A	N/A	82	80	N/A	N/A	4818365

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required 20x dilution. Detection limit was adjusted accordingly.

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Report Date: 2017/01/19

Cape Cod Comission
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TEST SUMMARY

Maxxam ID: DSE693
Sample ID: PRW-4 INFLUENT
Matrix: Water

Collected: 2017/01/04
Shipped:
Received: 2017/01/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4818365	2017/01/09	2017/01/11	Janet Dalisay

Maxxam ID: DSE694
Sample ID: MID POINT
Matrix: Water

Collected: 2017/01/04
Shipped:
Received: 2017/01/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4818365	2017/01/09	2017/01/11	Janet Dalisay

Maxxam ID: DSE695
Sample ID: EFFLUENT
Matrix: Water

Collected: 2017/01/04
Shipped:
Received: 2017/01/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water	LCMS	4818365	2017/01/09	2017/01/11	Janet Dalisay

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GENERAL COMMENTS

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4818365	JDA	Matrix Spike	6:2 Fluorotelomer sulfonate	2017/01/11		98	%	70 - 130
			8:2 Fluorotelomer sulfonate	2017/01/11		91	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2017/01/11		87	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2017/01/11		84	%	70 - 130
			N-methylperfluorooctane sulfonamide	2017/01/11		90	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2017/01/11		80	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2017/01/11		94	%	70 - 130
			Perfluorobutanoic acid	2017/01/11		98	%	70 - 130
			Perfluorodecane Sulfonate	2017/01/11		81	%	70 - 130
			Perfluoroheptane sulfonate	2017/01/11		93	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2017/01/11		98	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2017/01/11		95	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2017/01/11		95	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2017/01/11		98	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2017/01/11		90	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2017/01/11		93	%	70 - 130
			Perfluorotetradecanoic Acid	2017/01/11		97	%	70 - 130
			Perfluorotridecanoic Acid	2017/01/11		97	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2017/01/11		82	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2017/01/11		93	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2017/01/11		90	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2017/01/11		96	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2017/01/11		94	%	70 - 130
4818365	JDA	Spiked Blank	13C4-Perfluorooctanesulfonate	2017/01/11		75	%	70 - 130
			13C4-Perfluorooctanoic acid	2017/01/11		85	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2017/01/11		78	%	60 - 120
			6:2 Fluorotelomer sulfonate	2017/01/11		85	%	70 - 130
			8:2 Fluorotelomer sulfonate	2017/01/11		83	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2017/01/11		82	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2017/01/11		92	%	70 - 130
			N-methylperfluorooctane sulfonamide	2017/01/11		89	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2017/01/11		90	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2017/01/11		92	%	70 - 130
			Perfluorobutanoic acid	2017/01/11		85	%	70 - 130
			Perfluorodecane Sulfonate	2017/01/11		91	%	70 - 130
			Perfluoroheptane sulfonate	2017/01/11		94	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2017/01/11		101	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2017/01/11		92	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2017/01/11		93	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2017/01/11		99	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2017/01/11		91	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2017/01/11		89	%	70 - 130
			Perfluorotetradecanoic Acid	2017/01/11		90	%	70 - 130
			Perfluorotridecanoic Acid	2017/01/11		91	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2017/01/11		87	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2017/01/11		91	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2017/01/11		91	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2017/01/11		91	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2017/01/11		96	%	70 - 130
4818365	JDA	Method Blank	13C4-Perfluorooctanesulfonate	2017/01/11		86	%	70 - 130
			13C4-Perfluorooctanoic acid	2017/01/11		92	%	70 - 130
			13C8-Perfluorooctanesulfonamide	2017/01/11		80	%	60 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			6:2 Fluorotelomer sulfonate	2017/01/11	<0.0065		ug/L	
			8:2 Fluorotelomer sulfonate	2017/01/11	<0.0055		ug/L	
			N-ethylperfluorooctane sulfonamide	2017/01/11	<0.0053		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2017/01/11	<0.0049		ug/L	
			N-methylperfluorooctane sulfonamide	2017/01/11	<0.0040		ug/L	
			N-methylperfluorooctanesulfonamidol	2017/01/11	<0.0061		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2017/01/11	<0.0019		ug/L	
			Perfluorobutanoic acid	2017/01/11	<0.0066		ug/L	
			Perfluorodecane Sulfonate	2017/01/11	<0.0043		ug/L	
			Perfluoroheptane sulfonate	2017/01/11	<0.0036		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2017/01/11	<0.0047		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2017/01/11	<0.0040		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2017/01/11	<0.0046		ug/L	
			Perfluorononanoic Acid (PFNA)	2017/01/11	<0.0046		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2017/01/11	<0.0058		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2017/01/11	<0.0036		ug/L	
			Perfluorotetradecanoic Acid	2017/01/11	<0.0052		ug/L	
			Perfluorotridecanoic Acid	2017/01/11	<0.0032		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2017/01/11	<0.0037		ug/L	
			Perfluorodecanoic Acid (PFDA)	2017/01/11	<0.0066		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2017/01/11	<0.0057		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2017/01/11	<0.0053		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2017/01/11	<0.0033		ug/L	
4818365	JDA	RPD - Sample/Sample Dup	Perfluorobutane Sulfonate (PFBS)	2017/01/11	NC		%	30
			Perfluorobutanoic acid	2017/01/11	NC		%	30
			Perfluorodecane Sulfonate	2017/01/11	NC		%	30
			Perfluoroheptane sulfonate	2017/01/11	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2017/01/11	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2017/01/11	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2017/01/11	NC		%	30
			Perfluorononanoic Acid (PFNA)	2017/01/11	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2017/01/11	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2017/01/11	NC		%	30
			Perfluorotetradecanoic Acid	2017/01/11	NC		%	30
			Perfluorotridecanoic Acid	2017/01/11	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2017/01/11	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2017/01/11	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2017/01/11	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2017/01/11	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2017/01/11	NC		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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